

## LAPAROSCOPIC TRANSABDOMINAL PRE-PERITONEAL (TAPP) PROCEDURE FOR GROIN HERNIA. HOW TO DO IT FOR BETTER OUTCOMES

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**LAPAROSCOPIC TRANSABDOMINAL PRE-PERITONEAL PROCEDURE (TAPP) FOR GROIN HERNIA. HOW TO DO IT FOR BETTER OUTCOMES (Abstract):** The laparoscopic approach for the groin hernia repair has several advantages: decreased immediate and late postoperative pain, less numbness in inguinal area, less mesh infection and a rapid recovery. However the good outcomes are not granted, and there are some key points to be followed for better postoperative results. The aim of this video is to highlight these TAPP (TransAbdominal Pre-Peritoneal) related key points, from the operative indication, pre operative preparation and surgical procedure, until the post operative follow up.

**KEY WORDS:** LAPAROSCOPY; GROIN HERNIA; TRANSABDOMINAL PRE-PERITONEAL PROCEDURE (TAPP)

**SHORT TITLE:** TAPP – How to do it

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### Video

#### BACKGROUND

The laparoscopic approach for the groin hernia repair has several advantages: decreased immediate and late postoperative pain, less numbness in inguinal area, less mesh infection and a rapid recovery [1]. However the good outcomes are not granted, and there are some key points to be followed for better postoperative results.

The aim of this video is to highlight these TAPP (TransAbdominal Pre-Peritoneal) related key points, from the operative indication, pre operative preparation and surgical procedure, until the post operative follow up.

#### TAPP INDICATIONS:

TAPP can be performed in any type of hernia, even in complicated (strangulated)

hernia [2,3]. Relative contraindications are the large inguino-scrotal hernias and history of radical prostatectomy [2,3]. Different general comorbidities (e.g. heart failure, chronic respiratory disease) can contraindicate the general anesthesia and, as consequence, the TAPP [2,3].

#### PREOPERATIVE PREPARATION

There is no particular preparation; however it has to be highlighted the importance of comorbidities evaluation and adequate skin preparation. In this way it is important to note the preoperative antiseptic shower, the hair removing using a barber clipper, use of alcoholic based solution for skin preparation and the bladder emptying just before the procedure (facilitate the dissection and avoid bladder injuries) [2-4].

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## ANESTHESIA AND OPERATIVE ROOM SET-UP; INSTRUMENTS

General anesthesia is mandatory. The patient is placed in supine position, in a 15° Trendelenburg tilt with both arms in adduction along the body; the laparoscopic tower is placed to the feet of the patient as the display to be located on the hernia's site [5,6]. The surgeon operates from the opposite side of the hernia near the patient's shoulder, and the assistant stands opposite to the surgeon [5,6].

Three trocars are used: one of 10 mm and two of 5 mm. Common laparoscopic instruments (fenestrated graspers, scissors, hook, needle holder etc.) are necessary. The 30° laparoscope is preferable [5].

### SURGICAL PROCEDURE:

Usually the *pneumoperitoneum* is performed using a Veress needle [5]. The open technique is used in patients with previous abdominal surgery and/or umbilical hernia. The 5 mm trocars are inserted under laparoscopic view control, laterally from the epigastric vessels to improve the ergonomics and triangulation [5].

The procedure starts by a careful *exploration* of the abdomen identifying the superficial anatomical landmarks (urachus, umbilical folds, epigastric vessels, spermatic vessels, vas deferens or uterine round ligament) and the site and type of hernia [7].

Then a *large opening of the peritoneum* is performed, from the antero-superior iliac spine until the lateral umbilical ligament (umbilical artery cord) 2 to 3 cm beyond the parietal defect [1,3-6,8].

The *dissection* starts in Retzius space, in contact with abdominal rectus muscles, from laterally to medial and from cranial to caudal, "targeting" the pubic bone, dividing the fine conjunctive fibers ("angel hair") [1,5]. Then, the dissection is conducted from medial to lateral into the Bogros space, from epigastric vessels to spermatic vessels [5]. In the same time we start the dissection of hernia sac. The hernia sac is completely dissected using traction contra-traction maneuvers, sharp and blunt dissection and

fine coagulation; it is mandatory to find the avascular plan to preserve the spermatic fascia and to protect the fragile parietal structures (vas deferens, vessels and nerves) [1,5,8]. The dissection has to be conducted in obturator fossa to identify the occult obturator hernias (type I obturator hernia) [5]. The dissection is completed when all the deep anatomic landmarks (Cooper, Gimbernat ligaments, corona mortis and external iliac vein) are well exposed and the pre peritoneal space is wide opened (at least 12 x 15 cm) to allow the correct mesh deployment and parietalization [1,5,8].

It is important to search, dissect and remove the cord or pre peritoneal lipoma, because the overlooked lipomas could be misdiagnosed as recurrent hernia or seroma [9].

Afterwards, a large (12 x 15 cm) light weight *mesh is deployed* in pre peritoneal space, positioning to cover all the parietal defects and fixed in appropriate position using absorbable staples [1-3,6,8]. For the bilateral hernia two overlapping mesh are used, stapled together on the midline [1-3,6,8].

In case of large hernia or after difficult dissection or in patients with risk of hemorrhage a suction drain is inserted in Retzius space [10]; it will be removed after 12 to 24 hours postoperatively.

The peritoneum is then carefully closed using continuous non absorbable suture secured with an extracorporeal knot; the closure using staples or barbed sutures is also possible [5]. The closure has to be "waterproof" to avoid small bowel herniation [2,3].

The trocars are then removed under laparoscopic control view. Usually the trocar sites are infiltrated using ropivacaine, under laparoscopic view [5]. The pneumoperitoneum is then exsufflated and the trocars wounds are closed [5].

### POSTOPERATIVE PERIOD

The usual postoperative analgesic therapy consists in anti inflammatory non

steroid drugs (Paracetamol and Ketoprofen). Usually the patients are discharged in the same day or in first postoperative day [5]. To further control the pain, all the patients received a prescription with Paracetamol 500 mg x 3/day and Ketoprofen 100 mg x 2/day for the first 7 days [5]. A routine thromboembolic disease prophylaxis with light-weight heparin therapy for 7 days for all the patients, is usually performed even the subject is controversy [2,3,5].

### COMPLICATIONS

Different *postoperative complications* are noted in the literature: seroma, hematoma, chronic pain, ischemic orchitis or testicular atrophy, infertility.

*Seroma* is the most frequent complication of TAPP repair [2,3]; in my experience, I noted a 6% rate, [11] close to the rate reported in literature (5.7%) [2,3]; furthermore I noted a decreasing rate of seroma after the use of suction drains.

*Hematoma* is less frequent in endoscopic hernia repair than in open repairs, with a rate of about 8% [2,3]; in my experience, hematoma was noted in only 1.8% cases [11].

*Chronic pain*, defined as persistence of pain 3 months after the operation [12], is less frequent in endoscopic techniques, and especially after TAPP, than in open hernia repair [2,3]; it was noted in 0.6% in a previous work [11].

Several other complications after TAPP were reported in the literature with an incidence rate of 1% or less: wound / mesh infection, urinary retention, bladder damage, mesh migration, bowel obstruction, ischemic orchitis / testicular atrophy [2,3].

The recurrence rate varies between 0.4 to 4.8% [2,3,13]; I noted a 0.6% rate of recurrence and open anterior approach (Lichtenstein repair) has performed [11].

### CONCLUSIONS

TAPP is valuable procedure for the cure of groin hernia; is associated with low rate of postoperative morbidity and recurrence. Both superficial and deep

anatomic landmarks are easily recognizable. The laparoscopic exploration allows the treatment of incarcerated / strangulated hernias and the intra operative diagnosis of occult hernias. The procedure is suitable for day surgery.

### CONFLICT OF INTERESTS

None to declare

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